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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/932,427	09/17/1997	YOSHIO KITAMURA	1081.1055/JD	5306
7590	03/30/2004		EXAMINER	
STAAS & HALSEY 700 ELEVENTH STREET NW SUITE 500 WASHINGTON, DC 20001			PORTKA, GARY J	
			ART UNIT	PAPER NUMBER
			2188	37
			DATE MAILED: 03/30/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	08/932,427	KITAMURA, YOSHIO
	Examiner	Art Unit
	Gary J Portka	2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 11 February 2004.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,3,7,13-15 and 17-20 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1,3,7,13-15 and 17-20 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

1. Claims 1, 7, 13-15, 19 and 20 have been amended by Applicant. Claims 1, 3, 7, 13-15, and 17-20 are pending.

Claim Objections

2. Claims are objected to because of the following informalities:

- a. Each of the independent claims has the general limitation of judging, then selecting if normal or abnormal, which are worded inconsistently and therefore without clarity. Examiner suggests that in each case the wording show “judging [x], selecting [y if normal], and selecting [x if abnormal]” for clarity. Therefore the following is suggested: In claim 1 at line 27, after “abnormal,” delete “and”; at line 30 after “volume” (second occurrence) insert “,”. In claim 7 at line 29 after “volume” insert “,”. In claim 13 at line 23 after “volume” insert “,”. In claim 14 at line 25 after “volume” insert “,”. In claim 15 at line 18 delete “and”; at line 21 after “volume” insert “,”. In claim 19 at line 12 after “abnormal” delete “and” and insert “,”; at line 14 after “normal” (first occurrence) insert “,”.
- b. In claim 14 at line 7 after “selecting” insert “a”. At lines 19-20, “and said designated logical volume of said physical volumes” does not make sense in the context (it is set off between semi-colons and thus appears to be a separate self-contained limitation).
- c. In claim 19 at line 11 “said status information of said logical volume” lacks proper antecedent basis. Only “a status of said plurality of physical disk units of each logical volume” was previously recited.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 7, 13-15, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 60-205641, in view of JP 3-253933 (pages and lines numbers hereinbelow reference the supplied English translations).

5. As to claims 1, 7, 13-15, and 19-20, JP 60-205641 discloses a RAID apparatus (since any multiple disk system with multiple volumes holding identical data may be considered RAID) and control method comprising:

a. plurality of disk units storing a plurality of copies of each of data of logical volumes (see page 2 lines 19-22 and page 3 lines 6-11 and 24-27), and disk controller for accessing the disk units at the logical volumes (required to control disks, and including main memory, CPU, and dual volume control program, see page 3 line 27 to page 4 line 2, and page 4 lines 20-22);

b. the disk controller including a memory storing number of request operations for each disk, and control means comparing these and selecting the single disk having the least, and thus outputting a request to the single minimum waiting disk unit based upon the comparison, where the number is

incremented/decremented for each new request/completion (see (see page 3 line 27 to page 4 line 13);

c. wherein the disk units perform operations in a queued order (see queues of Figs. 2 and 3);

d. wherein the memory stores the recited status table indicating correspondence between disks and logical volumes and selection of the disk on which a logical volume is allocated by comparison of operation numbers (the sections cited above disclose the correspondence of disks via the physical volumes of the multiple volume). The table stores structure definition information to the extent recited since for each multiple volume a table identifies the physical volumes used and last access cylinder number. This table also identifies where the copies of each logical volume reside and therefore holds mirroring information for each logical volume as recited.

JP 60-205641 does not disclose that the normal/abnormal status of each disk is stored in a table, to avoid selecting an abnormal disk as recited. However, JP 3-253933 discloses a table storing various states of disks, including if a write is in progress, and if in normal working order (see page 8 lines 24-27, page 10 lines 21-27, and page 11 line 25 to page 12 line 6). Thus it teaches an easy method for accounting for and avoiding the attempted use of a disk that is in an abnormal status, and this advantage would have motivated an artisan to implement it in a system such as in JP 60-205641. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to

store status of each disk in a table, because this was a known means of preventing the using of a disk in an abnormal status.

6. As to claim 3, JP 60-205641 discloses channel adapter, device adapter, and resource manager to the extent that these elements are recited, as described within the sections cited above.

7. As to claims 17 and 18, the status of disks disclosed in JP 3-253933 as described above may be considered part of either of both of the recited tables to the extent recited, all further limitations being disclosed in the implementation of the abnormal status of a disk as described above.

Response to Arguments

8. Applicant's arguments filed February 11, 2004 have been fully considered but they are not persuasive. Applicants have argued that the prior art of record does not teach that a status table stores structure definition information and mirroring information for each logical volume. Examiner disagrees to the extent that these limitations are claimed; the multiple volume management tables described above indicate on which physical devices and to what cylinder a volume is stored, therefore incorporating structure definition information since they indicate where in the structure of the device the volume resides, and also incorporating mirroring information since they indicate where copies (mirrors) of a volume reside.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary J Portka whose telephone number is (703) 305-4033. The examiner can normally be reached on M-F 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

Gary J Portka
Primary Examiner
Art Unit 2188

March 29, 2004

